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ABSTRACT

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A GENERALIZED EVALUATION MODEL FOR PRIMARY PREVENTION PROGRAMS

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ABSTRACT

A generalized evaluation model (GEM) has been developed to evaluate primary prevention program impact. The GEM model views primary prevention dynamically; delineating four structural components (program, organization, target population, system) and four developmental stages (initiation, establishment, integration, continuation). The interaction of the four structural components as the prevention effort moves through the developmental stages provides the focus of the evaluation. GEM emphasizes processes to specify factors that contribute to a program successfully reducing or preventing instances of physical, cognitive, emotional, or social impairment.

INTRODUCTION

In recent years, there appears to be a growing emphasis among educators and social scientists on efforts directed toward the prevention of various human problems. Primary prevention is defined as "the reduction of the incidence of those kinds of behaviors which are designated as maladaptive" (Bloom, 1971).

One need only examine such recent programmatic efforts as Project Head Start and the Career Education movement to determine the growing concern in the field of education for enhancing the child's ability to develop into a psycho-socially adequate human being.

The value of a primary prevention approach enjoys considerable intuitive appeal among educators and social scientists. However, empirical evaluation of the success of such efforts is negligible. In fact, the lack of supportive evidence for primary prevention has seriously retarded the growth of these kinds of programs.

This brings us as educators and social scientists to a decision point. Either we can accept the evidence accumulated to date as indicative of the failure of primary prevention; or researchers can direct efforts into generating methodologies which may be more appropriate for evaluating primary prevention efforts. The present authors chose the latter course of action. The evaluation model presented here is a product of that decision.

The concept of primary prevention is not amenable to traditional research methodologies. The notion of *preventing a certain behavior or problem from occurring* presents considerable problems in determining appropriate measures. The most commonly selected dependent variable has been *rates of incidence*. However, valid measures of incidence are difficult to establish, as are

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appropriate control groups. In addition, primary prevention usually requires considerable time before observable results can be measured. Therefore, the high cost of such longitudinal research has contributed also to the lack of evaluation efforts associated with primary prevention (Bloom, 1968; Bloom, 1972; Kessler & Albee, 1975).

The evaluation process GEM, reported here, was designed to overcome many of the problems associated with evaluating primary prevention programs. The model was designed to apply to a wide variety of programs in order to enhance its applicability and utility for numerous interested parties (e.g., educators, social scientists, social agency personnel, etc.).

The organization of this paper mirrors the process through which the resulting evaluation model was derived:

- Explication of underlying assumptions
- A conceptual framework for the development of a primary prevention effort
- Generalized evaluation model
- Implications of the model for future applications

UNDERLYING ASSUMPTIONS

Any evaluation model is developed out of theoretical and/or pragmatic assumptions. In some cases the way in which these assumptions affect the implementation of the model is easy to recognize. In other cases, the assumptions which underly the model are not so obvious.

It is important for these assumptions to be made explicit so that the reader may examine them and come to understand the utility of the model for their own circumstances. This evaluation model for primary prevention programs was developed from four basic assumptions. Two of these assumptions relate to primary prevention itself and the remaining two relate to evaluation.

ASSUMPTIONS

- PRIMARY PREVENTION EFFORTS DO NOT OCCUR IN ISOLATION--Primary prevention efforts occur as only one component within a broad system. Also, there are various kinds of individuals and groups with particular interests and impact on the primary prevention program.
- PRIMARY PREVENTION EFFORTS ARE DEVELOPMENTAL PROCESSES WITH DIFFERENT IMPLICATIONS FOR VARIOUS GROUPS--Prevention efforts are developmental. That is, such efforts go through distinctive stages with each of these stages having implications not only for evaluation but also for program delivery.
- EVALUATION INVOLVES DELINEATING, OBTAINING, ANALYZING, FEEDING BACK, AND VALIDATING USEFUL INFORMATION--This assumption (or definition if you like) is recognizable as closely related to previous definitions of evaluation (Stufflebeam et al, 1971). The important distinction here is the emphasis on validating useful information. This requires empirically determining what information is useful to whom.
- THE MEANINGFULNESS OF EVALUATION IS SOLELY DEPENDENT ON THE UTILITY OF INFORMATION PROVIDED--This assumption is very clear in its emphasis placed on providing useful information. This should not be confused with the notion of evaluation as providing information for decision-

makers in the traditional sense. The notion presented here includes not only providing information to those decision-makers directly involved with the prevention program but also providing information to "decision-makers" who may not be directly involved with the prevention program, but whose "decisions" may very well affect the impact of such prevention efforts.

The authors have attempted to relate these assumptions to the evaluation model as it is presented. The Generalized Evaluation Model was developed following careful review of other available approaches (Alkin, 1969; Provus, 1969; Scriven, 1967; Stake, 1967; Stuffelbeam, et al, 1971; Tyler, 1942).

CONCEPTUAL FRAMEWORK OF PREVENTION PROGRAMS

Primary prevention programs are complex efforts which impact on and are influenced by various types of individuals and groups. The authors have delineated four structural *components*, which seem to be involved during the development of prevention efforts. These components reflect distinctive *perspectives* from which the prevention effort can be viewed:

- *Program*--the services and activities offered or implemented which comprise the prevention effort.
- *Organization*--the person, group of persons, or groups of persons who deliver or offer program services and activities.
- *Target Population*--the specified individual, group, or groups, to which program efforts are directed and in which prevention is desired to occur.
- *System*--the overall context in which program activities are carried out. This includes not only the subsystem in which the prevention effort is primarily directed (e.g., education) but other subsystems as well (e.g., political, industrial, economic, criminal justice, etc.).

These four perspectives provide a *structural* framework for examining primary prevention efforts. Such a structural analysis answers the question "*Who* is delivering *what* to *whom* in which *context*?".

We now turn to a detailed discussion of each of these four structural components in order to clarify their importance to the primary prevention effort.

PROGRAM

As described before, the program component comprises all activities directed toward achieving prevention. Such activities may be the result of thorough planning including such processes as goal, problem, or issue identification and the development of action strategies designed to achieve the systematically determined goal. On other occasions, these activities may result from less systematic efforts and may be the result of intuitive notions of "the best way to achieve prevention." Regardless of the method of designing such program activities, the program component always refers to specific activities implemented during the course of the prevention effort. The extent of program activities varies greatly from program to program. Activities can range from short, unstructured "rap sessions" to intensive in-service train-

ing workshops to comprehensive media campaigns to the implementation of a completely innovative educational program. All these types of activities may be included as the *program* component of the prevention effort. In short, the program component refers to the *what* of our basic question "Who is delivering *what* to whom in which context?".

ORGANIZATION

The organization component of our conceptual framework refers to the individual, group of individuals, or groups charged with the responsibility of implementing program activities or delivering program services. In some cases this may mean adding additional responsibility to an individual's existing role function and in other cases, it may mean creating new groups of individuals (organization) and assigning completely new role responsibilities. For example, a classroom teacher who incorporates a new educational component into the existing classroom curriculum would be considered the *organization* component and at the same time the creation of a new agency such as a drug abuse prevention agency comprising groups of individuals not previously working together would also be viewed as the *organization* component of the prevention effort. Thus, it can be seen that the organization component occurs in all prevention efforts and it may vary considerably from one program to the next. Therefore, it can be seen that the *organization* component refers to the *who* in our basic question "*Who* is delivering what to whom in which context?".

TARGET POPULATION

The target population refers to the individual, individuals, or groups to which prevention efforts are specifically directed. It is the structural component for which program activities are designed to specifically influence or to which program services are offered. As with our other structural components, a target population may vary significantly from program to program. In some cases, the target population may be one individual in particular; for example, one student or a parent. In other cases, it may be an entire community; such as, a community with a high incidence of drug abuse in which a prevention effort is implemented. In any prevention effort there is a designated individual or group to which the prevention effort is specifically directed, the target population. Therefore, in our basic question, "Who is delivering what to whom in which context?", the target population is the structural component which refers to the *whom*.

SYSTEM

Previously we have defined system as the "context" in which the prevention effort takes place. Again, this context can vary significantly from program to program. For example, in a situation where a classroom teacher implements particular activities directed at one particular student, the context would not only include other students in the classroom but other classrooms in the school building as well as other buildings in the district. In the case of the prevention efforts directed toward a particular system, for example, the educational system of a particular community, the context in which such an effort takes place not only includes the entire educational

system but other systems in the community as well, (e.g., political, religious, economic, etc.). Thus, the context refers to the larger system in which the specific target population is a component. Therefore, the system structual component answers the *context* of our basic question "Who is delivering what to whom in which context?".

The four components, or perspectives, identified here (program, organization, target population, system) are the product of the structural analysis of the prevention effort. They are not only important in understanding the structural framework of such prevention efforts but are significant in any evaluation process concerned with primary prevention programs. These components designate the specific structures to which the evaluation process should direct itself as well as the "audiences" to which evaluative information could prove beneficial. The notion of various audiences or "levels" to which evaluation should direct its efforts it not new to the field of evaluation theory. For example, Stufflebeam, et al., (1971) pointed out the importance of levels of decision-making and the resulting levels of evaluation efforts. However, Stufflebeam restricts the notion of levels to only one system and fails to emphasize the importance of these levels during the course of programatic efforts and only emphasizes the importance in decision-making.

The four structural components presented here should not be confused with this concept of "levels". The structural components are not restricted to one system (i.e., "subsystem"). Also, the structural components specified here are seen not only as important in the decision-making process to which evaluation is primarily aimed but also their importance or influence on the development of the prevention effort is equally emphasized.

Our basic question, "Who is delivering what to whom in which context?" emphasizes the interactive nature of the structural components. The interaction of the four components is a necessary focus because each of the components effects the other and the interaction of all four effects the primary prevention effort; and, therefore, the evaluation process.

PHASES OF DEVELOPMENT

The four structural components of primary prevention programs (program, organization, target population, system) emerge when prevention efforts are analyzed according to their framework. Another meaningful way of viewing such efforts is a functional analysis. As previously noted, one of the underlying assumptions of the present model is that primary prevention efforts are developmental processes with different implications for various groups. It is by examining the stages of such a developmental process that a functional analysis of primary prevention can be achieved.

Successful primary prevention efforts can be functionally categorized into four distinctive stages:

- Initiation
- Establishment
- Integration
- Continuation.

Each of these represents a separate phase in the development of a successful primary prevention effort. There are no specific timelines associated with any of these phases and each phase may take anywhere from a few weeks to several years.

The *initiation* phase refers to the initial start-up of the primary prevention effort. This would include such activities as program staffing, obtaining project facilities, and the initial implementation of project activities. In some instances this may take a relatively short time, i.e., a matter of days. In other instances involving a large scale prevention effort, an extended length of time may be required for completing this initiation phase.

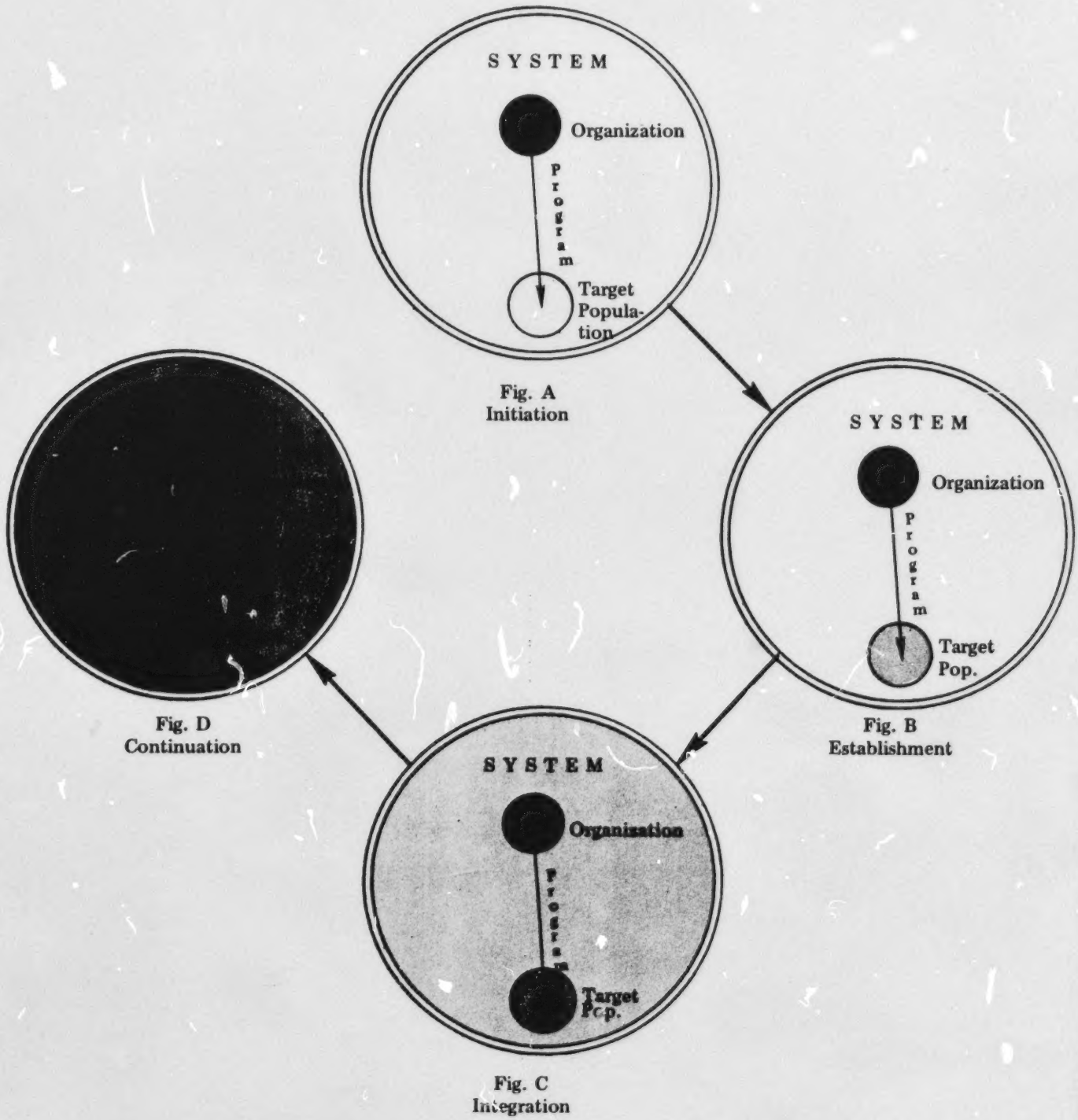
The *establishment* phase comprises the solution of any problems encountered in initiation and the refinement of service delivery. This involves the "formalizing" of the prevention effort. It is during this phase that program procedures are finalized and the initiation of "standard operating procedures" becomes standardized.

Integration denotes the process of becoming an integral element in the system. It is during this phase that the prevention effort becomes a viable component within the larger system. Other components within the system come to recognize the prevention effort as a resource and come to rely on the prevention efforts as an influential and *integral* component of the system.

The *continuation* phase accounts for the continual existence of the primary prevention effort. Specifically, the prevention effort has become such an integral part and important part within the system that it shall continue even after the withdrawal of external funding and original staff of the program. It is at this phase that the prevention effort is "institutionalized" within the system. This phase, in a sense, never ends since the prevention effort is an ongoing process. Specific efforts related to the continuation of this program effort may then be initiated and follow the same developmental phases as the original prevention effort. However, it still is subsumed in the continuation phase of the original effort.

THE DYNAMIC NATURE OF PRIMARY PREVENTION EFFORTS

The four structural components (program, organization, target population, system) and four functional categories (initiation, establishment, integration, continuation) of primary prevention efforts have been described. These descriptive analyses are useful for understanding the structure and function of primary prevention programs. However, a dynamic analysis of primary prevention is necessary to yield the most meaningful conceptual framework for examining primary prevention efforts thus, the most meaningful way for approaching the evaluation process. By examining the interaction of the four functional phases and the four structural components, we begin to see exactly what occurs during the development of successful primary prevention effort. Display 1 is a pictorial representation of this dynamic perspective of prevention efforts. Figure A represents the initiation phase of the prevention effort. Examination of this figure indicates that the organization begins to deliver program activities or program services to the



DISPLAY 1: A conceptual framework of primary prevention

target population. This interchange is occurring within the context of the larger system. The shading in Figure A represents the extent of *emphasis* and *influence* on the prevention effort. Therefore, in Figure A, the organization is shaded completely black indicating the great extent of emphasis on primary prevention and during its initiation phase it is the organization which is having all the influence on the prevention effort.

Figure B denotes the establishment phase of the prevention effort. Again, the organization is delivering program services to the target population within the larger system. The initial shading of the target population in this figure indicates that the target population begins to emphasize the primary prevention, albeit to a smaller extent than the organization, and begins to influence the primary prevention effort. This occurs through the target population gaining awareness of the prevention effort during the initiation phase and during the extablishment phase the target population comes to accept the primary prevention effort therefore beginning to "value" primary prevention. If this acceptance does not occur on the part of the target population the primary prevention effort becomes significantly jeopardized and the continuation into the next phase has a high probability of not occurring.

Figure C presents the integration phase of the development of the prevention effort. Again, the organization continues to deliver services to the target population within the context of a larger system. The shading here reveals that the organization still maintains the highest degree of emphasis and influence on the prevention effort with the target population increasing its influence. It is in this phase that the larger system or context within the primary prevention effort takes place begins to exert emphasis and influence on the prevention effort. This occurs as a result of the prevention efforts becoming a viable component of the total system.

Figure D represents the continuation phase of primary prevention. The organization continues to deliver services to the target population. However, as the shading represents, the target population now has as much emphasis and influence on the prevention effort as the organization with the overall system developing a greater extent of influence.

Finally, as evidence by now, it is this dynamic interaction between the structural components and the functional developmental processes which provides the most meaningful perspective of viewing the development of a successful primary prevention effort. Such a conceptual framework not only provides an understanding of primary prevention efforts but also provides a meaningful perspective to which any evaluation process should address itself. The evaluation model presented in the following section is designed to provide evaluation within this dynamic framework of primary prevention efforts. It is the interaction between the structural components and the functional processes that provides the focus for an evaluation model designed for practical utility as well as for providing meaningful evalaution information.

GENERALIZED EVALUATION MODEL

The Generalized Evaluation Model (GEM) has been designed to monitor primary prevention efforts *during the dynamic development* described in the previous section. Recall that our underlying assumptions relating to evaluation involve delineating, obtaining, analyzing, feeding back, and validating useful information with emphasis on the *usefulness* or utility of the information provided. These assumptions, combined with the dynamic framework of primary prevention, provide the basis for the GEM processes:

- *Descriptive*--the descriptive process is primarily a *monitoring* function. It involves gathering information that describes the purpose and outcome of *interactions* between and among: ▪ program ▪ organization ▪ target population ▪ system.
- *Evaluative*--the evaluative process involves both *analyzing* and *reporting* information. The analyzing function interprets the descriptive information according to each interaction or category of interactions. The reporting function feeds back the analyzed information to each of the four structural components of the primary prevention effort.
- *Validating*--the validating process has two main activities. *Tracking* involves documenting how information is *used* by each structural component (i.e., program, organization, target population, system). Next, the validating process *determines* what information is used as "goal achievement indicators" by each of the four structural components.

The primary processes of describing, evaluating, and validating information concerning primary prevention efforts indicate that the GEM model is an information-processing model designed to yield two main products:

- Continuous estimation of how well the primary prevention effort is achieving goals specified by each of the four structural components.
- Determination of which developmental stage can be attributed to the primary prevention effort (initiation, establishment, integration, continuation).

Now, we shall discuss each of these primary processes in order to clarify their functioning in the model.

DESCRIPTIVE PROCESS

The objective of the descriptive process is to develop and implement information-gathering procedures that *describe* the interactions within and among the program, organization, target population, and system during the course of the primary prevention effort. Activities designed to meet this objective in the descriptive process are numerous and they vary from prevention effort to prevention effort. These activities could include process observations, personal interviews, objective surveys, etc. Activities that work well in one setting may not work well in another. Therefore, specific activities are not recommended as "the right" activities but certain

criteria should be followed for determining which activities are most appropriate for a given setting. These criteria are:

- Quality of information provided
- Completeness of the information
- Cost-effectiveness of the procedures

The descriptive process is designed to yield specific products. These products are:

- Types of information available concerning the interactions of the structural components
- Sources of that information
- The most appropriate means for obtaining that information

EVALUATIVE PROCESS

The objective of the evaluative process to develop and to implement methods for *analyzing* and *feeding back* information to all four structural components. The major activity of this process is to analyze and interpret information yielded through the descriptive process. Numerous activities can be utilized for analyzing the descriptive information. Various statistical analyses as well as more "subjective" sorting techniques may prove beneficial in analyzing information. Appropriate methods for feeding back analyzed information has provided evaluators with considerable problems in the past. The authors feel there are no "guaranteed" procedures for effectively feeding back interpreted information. Some mechanisms work well in some settings but do not work so well in other settings. The specific mechanisms for feeding back information should be established for each particular program. Possible procedures include:

- Written or oral reports
- Workshops/conferences for disseminating information
- Utilization of mass media (television, radio, newspapers)
- Public meetings

Suggested criteria for determining the most appropriate feed-back mechanisms include:

- Effectiveness of the procedure (i.e., the similarity between information fed back and the information received)
- The extent of the applicability (i.e., degree of effectiveness for more than one structural component)
- Efficiency (i.e., time and effort demands)

The primary products of the evaluative process are:

- Interpretation and analysis of information
- Determining appropriate mechanisms for feeding back information

VALIDATING PROCESS

The validating process has two primary objectives:

- To develop and implement procedures that determine *indicators of primary prevention goal achievement* specific to each of the four components (program, organization, target population, system).
- To determine what information is useful to each component.

The activities which occur during this validating process revolve around these two objectives. Initially, activities aimed at goal specification for each of the structural components are implemented. This process involves specifying what each of the structural components (program, organization, target population, system) *expects* of the primary prevention effort. That is, what are the goals for the prevention effort of each of the structural components. Once the goals are established for each of the components, *indicators* of goal achievement are generated for each of the components. That is, initially the question is asked, "What are your goals for the prevention effort?", followed by the question, "How will you know when you achieve those goals?". This provides *measurable* indicators of goal achievement for each of the components. Specifying indicators for *each* of the components is crucial. It is very likely, that each component will hold somewhat different goals for the prevention effort. In order to comprehensively evaluate the prevention effort, the GEM model addresses all four components simultaneously.

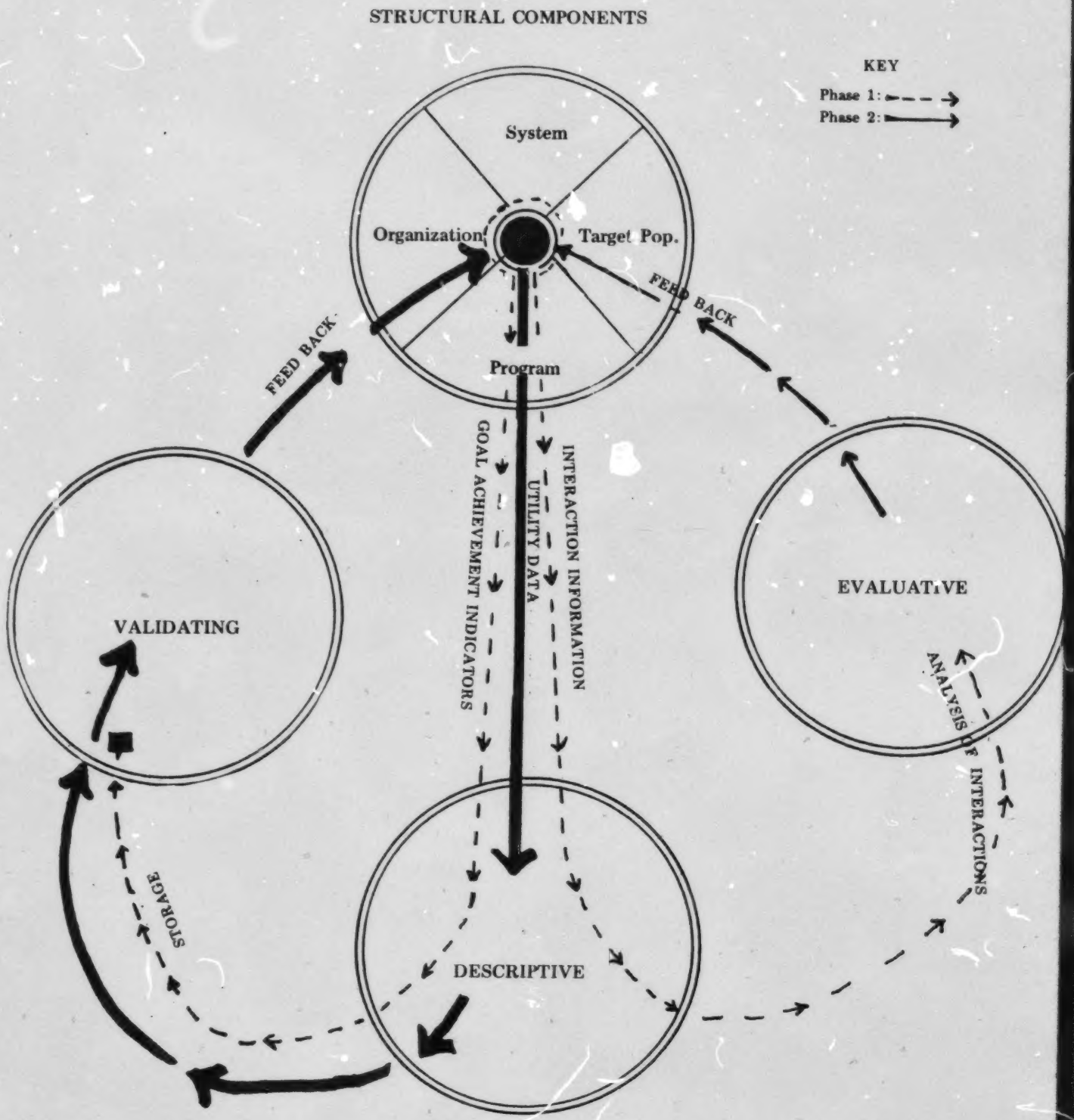
Once these goal achievement indicators have been defined, they become *criteria* for evaluating the utility of information provided to each of the four components. It is important to emphasize that the goals for prevention may alter during the course of the prevention effort. It this happens, additional indicators will be generated and others, previously specified, may be dropped.

The products of this validating process for each component are:

- Types of information received
- Types of information used
- Purposes for using information
- Impacts of information
- Indicators of primary prevention goal achievement

IMPLEMENTATION OF THE GEM PROCESS

The GEM process is presented graphically in Display 2. Display 2 should help to clarify the progressive phases of the GEM process. At the top of the display, we see the structual components of the prevention effort. They are presented in such a way to emphasize the interactive nature of the components. It is the interaction within and among the four components that provides the focus of the evaluation model.



DISPLAY 2: GEM evaluation process

Initially, two types of information are extracted from the four components and are inputs into the descriptive process: Goal achievement indicators and component interactions. The goal achievement information is channeled through the descriptive process into the validating process where it is stored for future use as criteria for utility.

Component interaction information also flows through the descriptive process, where it is directed into the evaluative process for analysis. Analyzed information then is returned to each of the four components for their use. This completes the first phase of the GEM process.

As phase II begins, the descriptive process is operationalized again, this time to specify how the information was used, by whom, for what purpose. These specifications are then channeled to the validating process. In the validating process "what is used" is compared with "what was expected to be useful". This comparison allows the validity of stored goal-achievement indicators to be measured.

In completing phase II, the four structural components receive the validity information. As a result of this feedback, any of the four components may alter the goals as well as the indicators which they had specified previously. Any refinement or alteration of goals is recycled into the descriptive process, where the revised information is ready to move through another complete cycle.

STAGE DEVELOPMENT

The previous discussion delineates one complete cycle of information through the GEM process. This cycle is repeated over and over throughout the prevention effort. By examining cycles of change, the stage of development of the prevention effort can be determined. For example, during the *initiation* stage, the only goal that the target population holds for the prevention effort may be that it "not rock the boat". But, as the organization continues to deliver program services, the target population's expectations for the prevention effort may change, to include demand for specific services from the organization thus, goals for prevention will reflect this increased expectation (establishment stage). As prevention efforts proceed into the integration stage, the target population's goals for prevention may alter again because they come to recognize the importance of prevention and the part that they play in the prevention effort. From this perspective, the target population assumes active responsibility in prevention efforts. Here again the target population's goals change to reflect this newly assumed responsibility.

As the prevention effort achieves the *continuation* stage, the target population has come to "value" prevention and makes a commitment to continue and support the prevention effort. At this point, the target population's goals for prevention are changed again.

It is by examining this continual process of changing expectations, resulting in goal modification, that developmental stages in the prevention effort can be assessed.

SUMMARY

Thus, by implementing the GEM model, the following can be achieved:

- Goals for prevention and indicators of when those goals shall be achieved for each of the structural components (program, organization, target population, system).
- Information concerning the interactions within and among the four structural components shall be delineated, obtained, analyzed, fed back, and validated for each of the four components.
- The *status* of the primary prevention effort can be determined. That is, the stage of development (initiation, establishing, integration, continuation) is delineated.

IMPLICATIONS

The assumptions and development of this evaluation model, together with the conceptual framework presented for prevention programs, have several important implications:

First, *it is suggested that evaluation methods should be consistent with programmatic functions.* In the case of primary prevention for instance, the developmental nature of the process requires continual monitoring of program efforts. Ongoing monitoring must also be accompanied by a validation process, so that the stages of the prevention effort may be accurately described and the degree of program impact accurately assessed.

This emphasis on program/evaluation congruency is critical to the selection or design of adequate evaluation methods for many other types of programs. In other words, the evaluation-processes should reflect program-processes in order to generate meaningful data.

Second, *it is suggested that the structural analysis developed here for primary prevention programs may be generalized to many other kinds of programs.* Although this paper deals specifically with the concept of programs classified as primary prevention efforts, it is easy to see how other programs could be evaluated more effectively if their structural components were considered. The perspectives drawn here: Program, Organization, Target Population, System, could be used to describe "who is delivering what to whom in which context" for almost any program evaluation.

Third, *it is suggested that program evaluation must consider "interaction effects" in order to explain program impact.*

It is important to point out that GEM is geared specifically to *understanding* the impact of primary prevention. It differs from most other evaluation models in this way. Other approaches are designed to determine the effectiveness and efficiency of program efforts and accomplishments. This model addresses itself not only to the question, "How much of what happened to whom?" but also to the question, "Why?". In other words, the GEM process can explain why a given level of impact is achieved by evaluating the prevention effort from four different perspectives simultaneously. This implies that program evaluation need not only be

exploratory, it may also be *explanatory*, if interaction effects can be identified and assessed.

Finally, *it is suggested that step-by-step guidelines* for implementing the generalized evaluation model can be generated for use by those concerned with program delivery or evalaution.*

*Guidelines for implementing the GEM process will be available for distribution in the near future. Contact either author for further information.

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